WHAT IS CLAIMED IS:

1. A compound of formula:

HN-Gla[1]-Leu[2]-Tyr[3]-Glu[4]-Asn[5]-Val[6]-Gly[7]-Met[8]-Tyr[9]-NH
| |
C(O)----------CH_2----------L----------CH_2----------CHC(O)NH_2 [SEQ ID NO: 1],

in which L is sulfur, sulfoxide, oxygen or methylene,

in which, optionally, one or more of Tyr^3, Glu^4, Val^6, Met^8 and Tyr^9 is modified, and

in which, optionally, there is a conservative or neutral amino acid substitution at either one or both of Leu^2 and Gly^7,

wherein said compound binds an Src homology 2 (SH2) domain in a protein comprising an SH2 domain, is non-phosphorylated, is redox-stable *in vivo*, and is characterized by an IC_{50} *in vivo* of less than about 4.0 μM when the target protein is growth factor receptor-bound protein 2 (Grb2), and

whereupon binding to Grb2, the compound has a turn conformation.

2. The compound of claim 1, wherein said IC_{50} *in vivo* is less than or equal to 2.0 μM.

3. A compound of formula:

HN-aa[1]-Leu[2]-Tyr[3]-aa[4]-Asn[5]-Val[6]-Gly[7]-Met[8]-Tyr[9]-NH
| |
C(O)----------CH_2----------L----------CH_2-------CHC(O)NH_2 [SEQ ID NO: 2],

in which L is sulfur, sulfoxide, oxygen or methylene,

in which (i) aa^1 is Adi and aa^4 is Glu or (ii) each of aa^1 and aa^4 is Adi,

in which, optionally, one or more of Tyr^3, Val^6, Met^8 and Tyr^9 is modified, and

in which, optionally, there is a conservative or neutral amino acid substitution at either one or both of Leu^2 and Gly^7,

wherein said compound binds an SH2 domain in a protein comprising an SH2 domain, is non-phosphorylated, is redox-stable *in vivo*, and is characterized by an IC_{50} *in vivo* of less than about 4.0 μM when the target protein is Grb2, and

whereupon binding to Grb2, the compound has a turn conformation.

4. The compound of claim 3, wherein said IC_{50} *in vivo* is less than or equal to 2.0 μM.

5. A conjugate comprising a compound of claim 1 and a carrier agent.

6. The conjugate of claim 5, wherein said carrier agent is a signal peptide, antennapedia peptide, or lipofectin.

7. A conjugate comprising a compound of claim 3 and a carrier agent.

8. The conjugate of claim 7, wherein said carrier agent is a signal peptide, antennapedia peptide, or lipofectin.

9. A composition comprising (i) a compound of claim 1 or a conjugate comprising a compound of claim 1 and a carrier agent and (ii) a carrier.

10. A composition comprising (i) a compound of claim 3 or a conjugate comprising a compound of claim 3 and a carrier agent and (ii) a carrier.

11. A method of inhibiting binding of an SH2 domain in a protein comprising an SH2 domain to a target protein in an animal, which method comprises contacting said SH2 domain with a target protein-binding inhibiting amount of (i) a compound of formula

HN-Gla^1-Leu^2-Tyr^3-Glu^4-Asn^5-Val^6-Gly^7-Met^8-Tyr^9-NH
| |
C(O)----------CH_2----------L----------CH_2----------CHC(O)NH_2 [SEQ ID NO: 1],

in which L is sulfur, sulfoxide, oxygen or methylene,

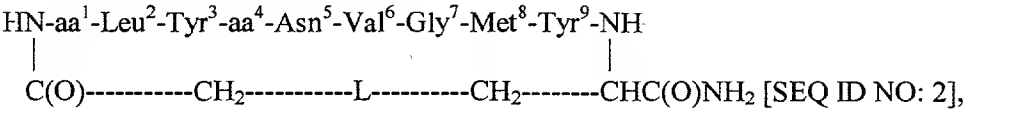
in which, optionally, one or more of Tyr^3, Glu^4, Val^6, Met^8 and Tyr^9 is modified, and

in which, optionally, there is a conservative or neutral amino acid substitution at either one or both of Leu^2 and Gly^7,

wherein said compound binds an SH2 domain in a protein comprising an SH2 domain, is non-phosphorylated, is redox-stable *in vivo*, and is characterized by an IC_{50} *in vivo* of less than about 4.0 μM when the target protein is Grb2, and

whereupon binding to Grb2, the compound has a turn conformation,

(ii) a compound of formula



[SEQ ID NO: 2],

in which L is sulfur, sulfoxide, oxygen or methylene,

in which (i) aa^1 is Adi and aa^4 is Glu or (ii) each of aa^1 and aa^4 is Adi,

in which, optionally, one or more of Tyr^3, Val^6, Met^8 and Tyr^9 is modified, and

in which, optionally, there is a conservative or neutral amino acid substitution at either one or both of Leu^2 and Gly^7,

wherein said compound binds an SH2 domain in a protein comprising an SH2 domain, is non-phosphorylated, is redox-stable *in vivo*, and is characterized by an IC_{50} *in vivo* of less than about 4.0 μM when the target protein is Grb2, and

whereupon binding to Grb2, the compound has a turn conformation, or

(iii) a conjugate comprising either of the forgoing compounds and a carrier agent,

whereupon binding of said compound or said conjugate to said SH2 domain, binding of said SH2 domain to said target protein is inhibited.

12. The method of claim 11, wherein said target protein is a growth factor receptor.

13. The method of claim 11, wherein said target protein is a morphology determining protein.

14. The method of claim 11, wherein said target protein is a cellular attachment protein.

15. The method of claim 11, wherein said target protein is a proto-oncoprotein or an oncoprotein.

16. The method of claim 11, wherein said target protein is mitogen-activated protein (MAP) kinase.

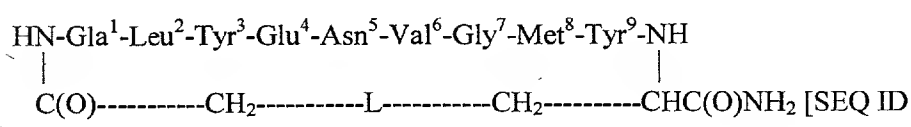
17. The method of claim 11, wherein inhibition of binding of said SH2 domain to said target protein prevents cancer.

18. The method of claim 17, wherein said cancer is breast cancer.

19. The method of claim 18, which method further comprises administering to said animal an effective amount of an anti-cancer agent, wherein inhibition of binding of said SH2 domain to said target protein and administration of an effective amount of an anti-cancer agent treats cancer.

20. The method of claim 19, wherein said anti-cancer agent is a cancer chemotherapeutic agent, radiation and/or a radioactive isotope.

21. A method of synthesizing a conjugate comprising (i) a compound of formula



[SEQ ID NO: 1],

in which L is sulfur, sulfoxide, oxygen or methylene,

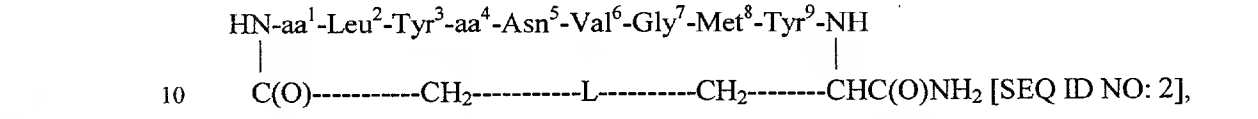
in which, optionally, one or more of Tyr^3, Glu^4, Val^6, Met^8 and Tyr^9 is modified, and

in which, optionally, there is a conservative or neutral amino acid substitution at either one or both of Leu^2 and Gly^7,

wherein said compound binds an Src homology 2 (SH2) domain in a protein comprising an SH2 domain, is non-phosphorylated, is redox-stable *in vivo*, and is characterized by an IC_{50} *in vivo* of less than about 4.0 μM when the target protein is growth factor receptor-bound protein 2 (Grb2), and

whereupon binding to Grb2, the compound has a turn conformation,

or a compound of formula



[SEQ ID NO: 2],

in which L is sulfur, sulfoxide, oxygen or methylene,

in which (i) aa^1 is Adi and aa^4 is Glu or (ii) each of aa^1 and aa^4 is Adi,

in which, optionally, one or more of Tyr^3, Val^6, Met^8 and Tyr^9 is modified, and

in which, optionally, there is a conservative or neutral amino acid substitution at either one or both of Leu^2 and Gly^7,

wherein said compound binds an SH2 domain in a protein comprising an SH2 domain, is non-phosphorylated, is redox-stable *in vivo*, and is characterized by an IC_{50} *in vivo* of less than about 4.0 μM when the target protein is Grb2, and

whereupon binding to Grb2, the compound has a turn conformation,

and (ii) a carrier agent, which method comprises:

(i) synthesizing from C-terminus to N-terminus a linear side-chain protected peptide comprising from N-terminus to C-terminus the amino acid sequence of the compound and the amino acid sequence of a carrier agent on an amide resin,

(ii) N-terminally haloacetylating the peptide,

(iii) cleaving the peptide from the resin and, either simultaneously or sequentially, deprotecting the side-chains of the peptide,

(iv) nucleophilically displacing the N-terminal halo group with the cysteine side-chain thiol functionality at from about pH 7 to about pH 8, and

(v) purifying the resulting conjugate.

22. The method of claim 21, wherein haloacetylating is bromoacetylating or chloroacetylating.